

Notes on Tiliaceae in Australia, 1

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Summary

Halford, D.A. (1993). Notes on Tiliaceae in Australia, 1. *Austrobaileya* 4(1): 75–85. A key to the genera of Tiliaceae in Australia is presented, as well as a key to the species of *Berrya* Roxb. In Australia, *Berrya* is represented by 2 species, viz *B. javanica* and *B. rotundifolia*. *B. javanica* (Turcz.) Burret is newly recorded for Australia. Lectotypes are designated for *Berrya rotundifolia* Domin and *Trichospermum pleiostigma* (F. Muell.) Kosterm. A new species of *Grewia* L., *G. graniticola* from North Queensland is described. Descriptions, illustrations and notes are provided for all native species discussed.

Keywords: Tiliaceae—Australia; *Berrya*—Australia; *Berrya javanica*; *Berrya rotundifolia*; *Trichospermum pleiostigma*; *Grewia graniticola*.

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Introduction

The family Tiliaceae is widespread in tropical and subtropical regions of the world extending into the temperate regions of the northern hemisphere. As defined by Cronquist (1981) it contains about 50 genera worldwide. In Australia the family is represented by eight genera of which one is a recent introduction.

Bentham's (1863) treatment was the first complete examination of the family in Aus-

tralia; he included in the family the genera *Berrya* Roxb., *Grewia* L., *Corchorus* L., *Triumfetta* L., *Aristotelia* L'Her., *Echinocarpus* Bl. and *Elaeocarpus* L.. The last three genera are now placed in the Elaeocarpaceae (Coode 1983; Mabberley 1989). More recent reviews of the Tiliaceae relevant to Australia include the contributions of Burret (1926, 1927) and Domin (1926).

Key to Australian genera of Tiliaceae

1. Sepals free 2
Sepals connate at least near base 6
2. Petals with prominent gland near base 3
Petals without prominent gland near base 4
3. Fruit a dehiscent capsule; seeds with a corona of radial hairs. Qld
(1 sp.) **Trichospermum**
Fruit drupaceous, 1- to 4-lobed; seeds glabrous. WA, NT, Qld, NSW
(11 spp.) **Grewia**
4. Fruit a berry; stigma sessile. Qld (1 sp.) **Muntingia**
Fruit not a berry; either dehiscent or indehiscent; stigma not sessile 5
5. Sepals often caudate at apex, without an appendage; fruit a dehiscent capsule, unarmed; ovules mostly more than 2 per loculus. WA, NT, Qld, NSW (c. 22 spp.) **Corchorus**
Sepals incurved or cucullate at apex, with an appendage inserted outside usually near apex; fruit indehiscent or if dehiscent then covered with hooked bristles; ovules 2 per loculus. WA, NT, Qld, NSW. (c. 55 spp.) **Triumfetta**

6. Fruit with wings. NT, Qld (2 spp.) **Berrya**
 Fruit not winged 7
7. Calyx persistent, accrescent; fruit subglobose, densely stellate hairy;
 leaves with stellate hairs on lower surface. NT (1 sp.) **Schoutenia**
 Calyx caducous, not accrescent; fruit transversely ellipsoidal with an
 oblique shortly attenuate base (shaped like a golf club), densely
 covered with grey lepidote scales; leaves covered with a dense,
 adpressed layer of scales. Qld (1 sp.) **Brownlowia**

Descriptions have been prepared from dried herbarium specimens or material preserved in 70% alcohol, glycerol and water mixture. All material cited has been seen unless otherwise stated.

Berrya Roxb.

Berrya is a small genus of five or six species distributed throughout the Indo-Malesian region as well as northern Australia and Fiji. Examination of the available Australian material of *Berrya* has revealed that the name *Berrya rotundifolia* Domin has been misapplied to plants in the Northern Territory and Cape York Peninsula, Queensland. These plants are referable to *Berrya javanica* (Turcz.) Burret, while *B. rotundifolia* itself is a very restricted island endemic, occurring only off the central Queensland coast.

Berrya Roxb., Pl. Coromandel 3: 60 (1820), orth. et nom. cons. **Type:** *B. ammonilla* Roxb. (= *B. cordifolia* (Willd.) Burret).

Trees, with stellate hairs. Leaves spirally arranged, simple, entire. Stipules small, caducous. Inflorescences axillary or terminal, panicles. Flowers bisexual, calyx, corolla and stamens marcescent. Sepals connate, campanulate to cupuliform, irregularly splitting or 3- to 5-lobed (not in Australia). Petals 5 rarely 3, 4 or 6, pink or white, obovate, glandular base absent. Androgynophore present or absent. Stamens numerous, in 5 lax antisepalous bundles, basically connate; anthers dorsifixed, with locules apically contiguous; staminodes sometimes present. Ovary stellate-pubescent, 2- to 5-locular; ovules 2–6 per loculus; style terete; stigma simple or irregularly lobed. Fruit a loculicidally dehiscent capsule, globose, stellate-pubescent, 2- to 5-valved, 1–4 seeds per loculus; valves with a longitudinal wing along each edge. Seeds globose to ovoid, either loosely enclosed in papery, persistent exotesta or covered with somewhat adpressed rigid, straight hairs.

Etymology: Named after Dr Andrew Berry (circa 1800), of Madras; an eminent physician and botanist.

Key to Australian species of *Berrya*

1. Seeds covered with somewhat adpressed rigid, straight hairs; Fruit 2- or rarely 3-celled; wings 1.0–2.0 cm long, 1.0–1.5 cm wide, suberect or twisted horizontally above apex of fruit; buds broadly ellipsoid, 3–4 mm long; leaf lamina broadly elliptic to circular, 5–11 cm long, 5–9 cm wide, lower surfaces with a sparse to moderately dense covering of adpressed stellate hairs; domatia sometimes present as small flaps of tissue in the vein axils; petiole 1–2 cm long. **B. rotundifolia**
- Seeds loosely enclosed in papery, persistent exotesta; Fruit 4- or 5-celled; wings broadly elliptic, 1–2 cm long, 1–1.5 cm wide, vertical, divergent; buds shortly obovoid, 5–8 mm long; leaf lamina elliptic to broadly elliptic or elliptic-ovate, 9–25 cm long, 5–15 cm wide, deciduous, lower surfaces sparsely covered with minute glandular peltate scales; domatia present as small hair-tufts in the vein axils; petiole 1.5–8 cm long **B. javanica**

Berrya rotundifolia Domin, *Biblioth. Bot.* 89: 374 (1927). **Type:** [Queensland. PORT CURTIS DISTRICT.] Cumberland Islands, [16 October 1802], *R. Brown* (lecto (here designated): BM *n.v.*, photograph at BRI; isolecto: K!).

Berrya ammonilla var. *rotundifolia* Benth., *Fl. austral.* 1: 268 (1863). **Type:** [Queensland. PORT CURTIS DISTRICT.] Cumberland Islands, *R. Brown* (lecto (here designated): BM *n.v.*, photograph at BRI; isolecto: K!).

Slender tree to 4 m high; bark grey, flaky; young branchlets with a sparse to moderately dense covering of echinate hairs. Leaves crowded towards the end of branchlets; lamina broadly elliptic to circular, 5–11 cm long, 5–9 cm wide, upper surfaces with a sparse covering of multiangulate and echinate hairs or glabrous, lower surfaces with a sparse to moderately dense covering of adpressed stellate hairs; domatia sometimes present as small flaps of tissue in the vein axils; base cordate; margin crenate; apex rounded; petiole 1–2 cm long, sparse to moderately dense with multiangulate and echinate hairs. Stipules caducous, linear, 2–4 mm long, stellate hairy. Panicles axillary, up to 4 cm long, 3 cm wide; peduncles stellate hairy, pedicels 4–8 mm long, stellate hairy, bracts c. 1 mm long. Buds broadly ellipsoid, 3–4 mm long. Calyx irregularly splitting, stellate hairy outside, inside glabrous with 5 sessile glands proximally. Petals obovate, 6–7 mm long, 3–4 mm wide, glabrous. Androgynophore absent; disc absent. Stamens in 5 antisepalous bundles, 4–6 stamens per bundle; filaments thick, 3–4 mm long; staminodes 5, ligulate, 3–4 mm long, alternating with the bundles of stamens. Ovary circular in outline, 1.5 mm diameter, laterally flattened, 2 (rarely 3) locular, 2 ovules per loculus, stellate-pubescent, ribbed; style terete, 3–4 mm long, glabrous; stigma irregularly lobed. Fruit c. 1 cm long, c. 1 cm wide (excluding wings); wings broadly elliptic, 1.0–2.0 cm long, 1.0–1.5 cm wide, spreading sub-erect or twisted into horizontal plane above apex of fruit. Seeds ovoid, 5–7 mm long, c. 3 mm diameter, covered with somewhat adpressed rigid, straight hairs. **Fig. 1.**

Specimens examined: Queensland. PORT CURTIS DISTRICT: Calder Island, May 1992, *Halford & Crombie* Q1305 (BRI); ditto, May 1992, *Halford & Crombie* Q1307 (BISH, BRI, DNA, K, L, MEL, QRS); Middle Percy Island, Howard Point, undated, *Tryon* (BRI [AQ86618], MEL [MEL1599082]); Howard Point, Middle Percy Island, Oct 1989, *Batianoff et al.* 11699 (BRI); Dolly Creek, Middle Percy Island, Nov 1989, *Batianoff et al.* 11599 (BRI).

Distribution and habitat: *B. rotundifolia* is known from Calder and Middle Percy Islands off the central Queensland coast. (**Map 1.**) It grows in low vine thicket communities on shallow rocky soils derived from granite.

Phenology: Flowering has been recorded in May, October and November. Fruiting specimens have been collected in May and October.

Typification: Bentham (1863) described *Berrya ammonilla* var. *rotundifolia* based on Robert Brown's material from Cumberland Islands. Domin (1926) examined Brown's material from Calder Island and recognised it as a species distinct from the tropical Asian taxon *B. ammonilla*. Domin used the epithet 'rotundifolia' for his new species and referred to Bentham's description of *B. ammonilla* var. *rotundifolia*. Domin commented "It was already described by Bentham as accurately as was possible with the material available". There are two specimens of Brown's from Calder Island one at K and one at BM. The material at the BM is selected as lectotype of both Domin's and Bentham's names because it has fruits and seed.

Notes: The specimen of Tryon's from Middle Percy Island is fragmented and not well preserved but it distinctly belongs to this species. Hand written notes with the BRI specimen suggest that the flowers are sweetly scented.

Conservation status: *B. rotundifolia* is locally common on Calder Island with an population estimated to be about 200 mature trees. Nothing is known about the population on Middle Percy Island, c. 110 km from Calder Island. Calder Island is a National Park with no developed areas. A conservation coding of 2RC based on Thomas and McDonald (1989) is appropriate.

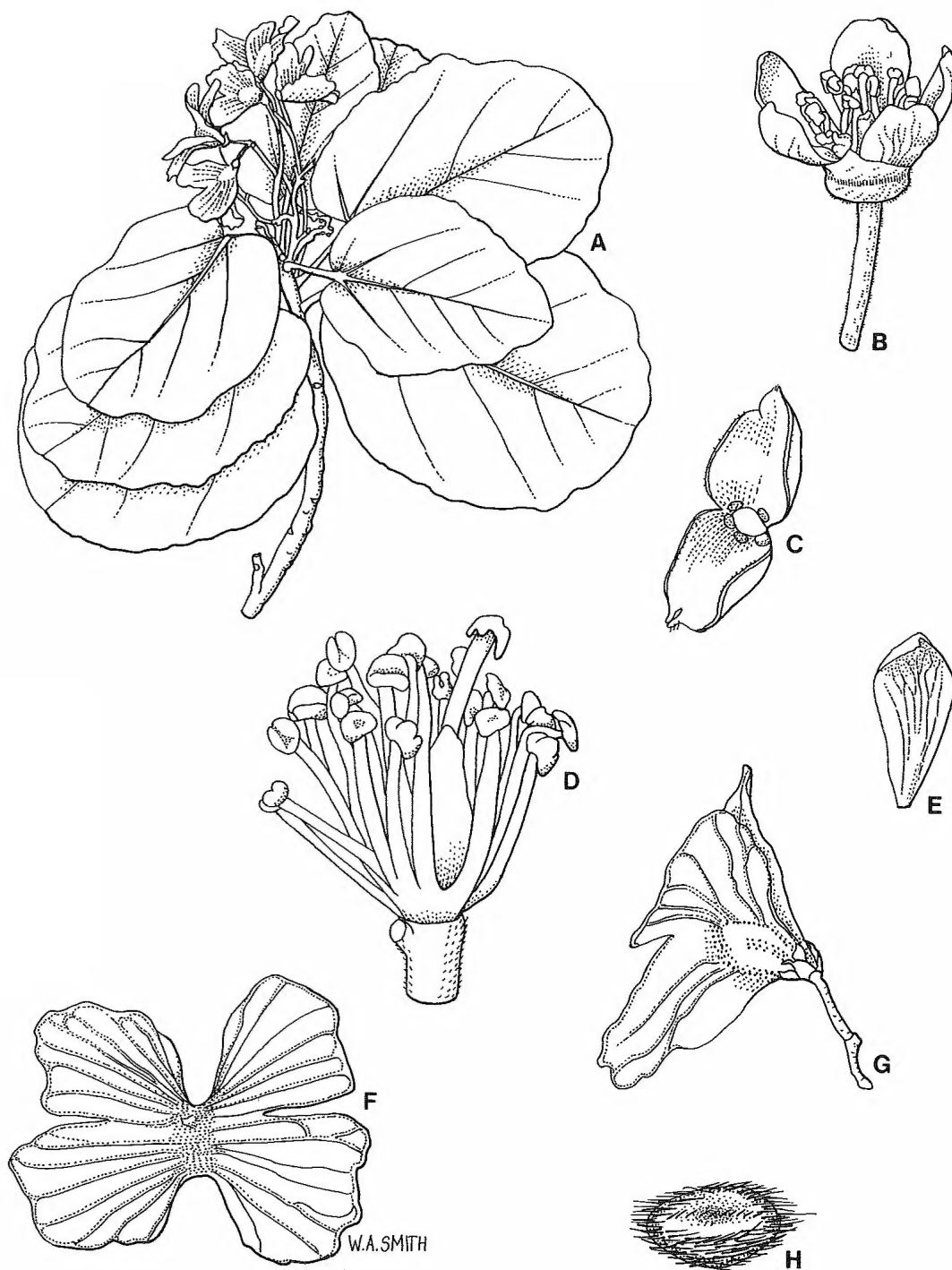


Fig.1. *Berrya rotundifolia*: A. fruiting branchlet $\times 0.5$. B. flower $\times 4$. C. calyx showing sessile glands at base $\times 4$. D. stamens, staminodes and style $\times 8$. E. petal $\times 4$. F. apical view of fruit $\times 1.5$. G. side view of fruit $\times 1.5$. H. seed $\times 4$. A, F–H, Halford & Crombie Q1307; B–E, Halford & Crombie Q1305.

Berrya javanica (Turcz.) Burret, Notizbl. Bot. Gart. Berlin-Dahlem, 9: 605 (1926); *Pterocoellion javanicum* Turcz., Bull. Soc. Imp. Naturalistes Moscou. 36(1): 572 (1863). **Type:** 'In Java Legit cl. Horsfield', (holo: ? KW *n.v.*).

Berrya quinquelocularis Tysm. & Binnend. ex Koord. & Valet., Icon. Bogor. 1: 19 tab. V (1897). **Type:** Cult. in Hort. Bog., Tysm. and Binnend. 2876 (holo: BO *n.v.*, photograph at BRI).

Tree to 25 m high, occasionally buttressed; bark flaky; branchlets glabrous or sparsely stellate-pubescent. Leaves crowded towards the end of branchlets; lamina elliptic to broadly elliptic or elliptic-ovate, 9–25 cm long, 5–15 cm wide, deciduous, upper surfaces with scattered adpressed stellate hairs or glabrous, lower surfaces sparsely covered with minute glandular peltate scales; domatia present as small hair-tufts in the vein axils; base shallowly cordate; margin entire; apex rounded or obtuse; petiole 1.5–8 cm long, sparsely covered with stellate hairs. Stipules caducous, linear, 2–3 mm long. Panicles up to 15 cm long, 12 cm wide, laxly branched, peduncles stellate-pubescent, cymes 3- to 7-flowered, bracts 3–4 mm long, 1 mm wide, stellate-tomentose. Buds shortly obovoid, 5–8 mm long. Calyx campanulate, irregularly splitting, 5 shortly stalked glands inside at base, densely stellate hairy outside. Petals narrowly obovate, 9–10 mm long, 2–2.5 mm wide, shortly clawed, glabrous except for few fimbriate peltate scales outside near base. Androgynophore present, c. 1 mm long, glabrous, eglandular; disc absent. Stamens in 5 lax antisepalous bundles, 9 to 12 stamens per bundle; filaments slender, 4–6 mm long, shortly connate proximally. Ovary globose, 1.5 mm diameter, 4- or 5-locular, minutely stellate hairy, ribbed; style elongate-conical, stout, minutely stellate hairy at base; stigma simple. Fruit 1–2 cm long, 1.5–2.5 cm wide (excluding wings), sparsely to densely stellate-pubescent, with mostly 2 or 3 seeds per cell; wings broadly elliptic, 1–2 cm long, 1–1.5 cm wide, vertical and spreading. Seeds ovoid, 5–6 mm long, 3–4 mm diameter, loosely enclosed in papery, persistent exotesta. **Fig. 2.**

Selected specimens: Northern Territory. DARWIN AND GULF REGION: Black Point, Cobourg Peninsula, Jul 1982, Wightman 122 & Dunlop (DNA); 4 km E Smith Point, Cobourg Peninsula, May 1983, Sivertsen 80 (DNA); Murganella, De Couray Head, Oct 1987, Russell-Smith 3699 & Lucas (DNA); Plot 147, Smith Point, Kuper Pt road, Cobourg Peninsula, May 1987, Clarke 992 (BRI, CANB); 250 km ENE of Darwin, Jun 1978, Story 8390 (BRI, CANB, DNA); Warangya, Elcho Island, Sep 1987, Russell-Smith 3288 & Lucas (BRI); Arnhem Land, mouth of Buckingham River, Dec 1987, Russell-Smith 4437 & Lucas (DNA); near Leanyer treatment ponds, Aug 1991, Brock 794 & Panton (DNA). **Queensland.** COOK DISTRICT: Lockerbie Scrub, Cape York road, 5 km N of old homestead site, 'Lockerbie' (abandoned), Sep 1985, Williams 85210 (BRI); Cape York, Nov 1955, White 1251 (BRI); Iron Range, Jul 1949, Flecker N.Q. Nat. Club 13171 (BRI); ditto, Jun 1915, Brass 19199 (BRI, CANB); Iron Range, (Portland Roads), Apr 1944, Flecker 8541 (BRI); Claudie River between Portland Roads and Iron Range, Oct 1968, Webb & Tracey 8522 (BRI); Claudie River (tidal reaches), Jul 1972, Hyland 6202 (BRI); Nesbit River, Silver Plains Holding, Sep 1973, Stocker 1054 (BRI); T.R.14, Rocky River Catchment, Sep 1973, Hyland 2839 (R.F.K.) (BRI); Rocky River, Sep 1971, Hyland 2545 (R.F.K.) (BRI).

Distribution and habitat: *B. javanica* is a native of Java and northern Australia. (**Map 1**). It occurs in rainforest and semi-evergreen vine thickets on a variety of soil types.

Phenology: In Australia flowering material has been collected in April and May. Fruiting material has been collected from April to November.

Conservation status: This species is widespread and not considered threatened.

Trichospermum Bl.

This is a widespread genus with 40 species in Malesia, western Pacific and tropical America (Mabberley 1989). There is one species, *Trichospermum pleiostigma* (F. Muell.) Kosterm.) in Australia.

Mueller (1872) described *Grewia pleiostigma*. This was later transferred to the genus *Althoffia* by Schumann and Lauterbach (1901). According to Chapman (1991) this combination was not validly made until 1926 by Burret. Kostermans (1972) considered that the distinction between the old world genera *Trichospermum* and *Althoffia* could not be maintained and transferred the names to *Trichospermum*. The genus is closely related to

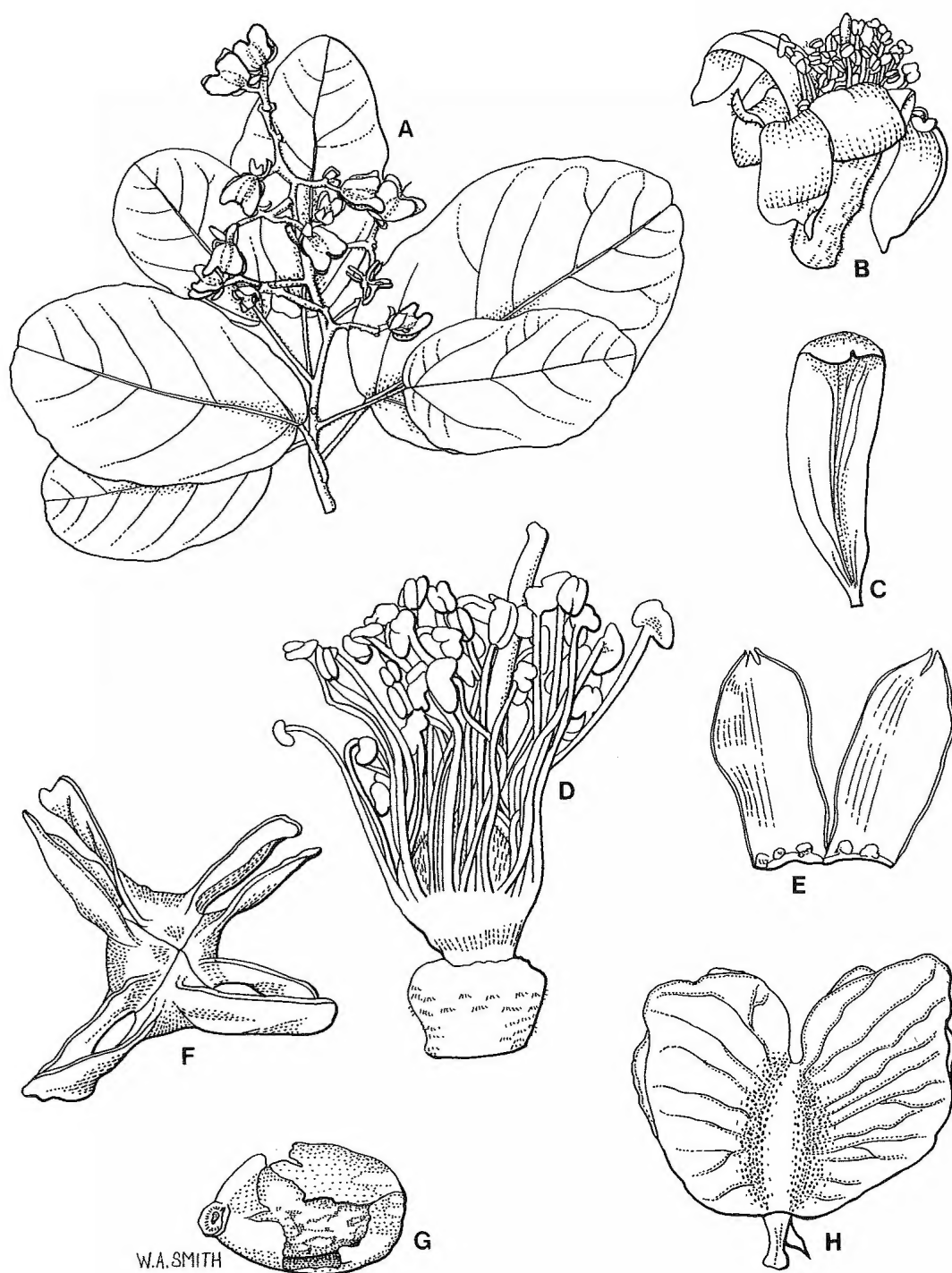


Fig. 2. *Berrya javanica*: A. fruiting branchlet $\times 0.5$. B. flower $\times 4$. C. petal $\times 4$. D. stamens and ovary $\times 8$. E. calyx showing shortly stalked glands at base $\times 4$. F. apical view of fruit $\times 1.5$. G. seed with portion of papery exotesta removed $\times 4$. H. side view of fruit $\times 1.5$. A,B, Russell-Smith 8234 & Lucas; C–E, Clarke 992; F–G, Williams 85210.

Grewia but differs in having thin, dehiscent capsules and numerous seeds each bearing a corona of radial hairs.

Trichospermum pleiostigma (F. Muell.) Kosterm., Trans. Bot. Soc. Edinb. 41: 428 (1972); *Grewia pleiostigma* F. Muell., Fragm. 8: 4 (1872); *Althoffia pleiostigma* (F. Muell.) Burret, Notizbl. Bot. Gart. Berlin-Dahlem 9: 860 (1926). **Type:** [Queensland. NORTH KENNEDY:] Rockingham Bay, 24 August 1868, [J. Dallachy] (lecto (designated here): MEL (MEL 1598994)).

Tree to 30 m, bark finely fissured with inconspicuous lenticels. Branchlets angular when young, densely puberulous with adpressed greyish stellate trichomes and a moderately dense overlay of echinate ferruginous trichomes; rays 0.1–0.5 mm long. Similar indumentum on stipules, petioles, peduncles and pedicels. Leaf lamina ovate to broadly ovate, 12–20 cm long, 6–12 cm wide; base cordate; apex acute; margin irregularly serrulate; indumentum sparse to moderately dense above with multiangulate trichomes (0.1–0.5 mm diameter) on lamina and echinate trichomes along primary venation, densely tomentose below with greyish multiangulate trichomes (c. 0.2 mm diameter) with a moderately dense overlay of echinate trichomes. Petioles 1.5–3.0 cm long. Stipules caducous, broadly ovate, 3–4 mm long, 5–7 mm wide. Inflorescences axillary corymbose cymes; peduncles 2–6 cm long; pedicels 2–6 mm long. Buds spheroidal-ellipsoidal, 3–4 mm diameter. Flowers unisexual. Sepals accrescent, linear-narrow elliptic, 5–6 mm long, 1.5–2.5 mm wide, somewhat fleshy, induplicate margin; indumentum a moderate to dense covering of echinate trichomes (c. 0.2 diameter) outside, sparsely puberulous inside. Petal violet, accrescent, narrowly obovate, 2–5 mm long, 1–1.5 mm wide, claw with reniform gland, bearded on margin. Androgynophore present, 0.3 mm long, ridged, no glands present on surface. Annulus densely bearded on margin with stellate trichomes. Male flowers; stamens numerous; filaments variable length, 1–2 mm long; ovary and style rudimentary. Female flowers; staminodes present, c. 1 mm long; ovary globose, 2–3 mm diameter, stellate-villose, 4- or 5-

locular; ovules 13–15 per loculus; style 0.5–1 mm long; stigma 4- or 5-lobed; lobes. Capsule subglobose, 4- or 5-lobed, 10 mm long, 8 mm wide, covered with long silk hairs, 4- or 5-valved. Seeds numerous, elliptic in outline, dorsi-ventrally flattened, soft slender trichomes 2–3 mm long on margin. **Fig. 3.**

Selected specimens: Queensland. COOK DISTRICT: Cook Highway, 19 miles [30.6 km] N of Cairns, Sep 1937, *Brass & White* 154 (BRI); 4 km W of Bruce Highway towards Kuranda, Kuranda Range, Dec 1991, *Halford* Q791 (BRI, DNA, K); 1 km W of Kamerunga along Lake Morris Road, c. 1 km SW of Cairns, Dec 1991, *Halford* Q805 (BRI, DNA, K, L, MEL, QRS); Cairns City Council Gardens, Oct 1963, *Gould* [AQ86602] (BRI); Mulgrave River, Aug 1889, *Bailey* [AQ86599] (BRI); S.F.R. 310, Upper Goldsborough L.A., May 1971, *Risley* 9 (BRI); Cooroo Lands (W of Innisfail), Aug 1968, *Hyland* s.n. [AQ223] (BRI). NORTH KENNEDY DISTRICT: 25 km NW of Tully on road to Cardstone, Dec 1991, *Halford* Q809 (BRI, CANB, DNA, K, L, MEL, QRS); Mission Beach, Oct 1967, *Hyland* 1154 (BRI); Dunk Island, Oct 1904, *Banfield* [AQ86598] (BRI).

Distribution and habitat: *T. pleiostigma* is widely distributed in the eastern parts of Malesia and in Australia, in north east Queensland from Port Douglas to Innisfail in open rainforest and on rainforest margins at altitudes to 200 m. (**Map 1**).

Phenology: Flowering and fruiting specimens have been collected from August to October.

Typification: In describing *Grewia pleiostigma*, Mueller cited a Dallachy specimen from Rockingham Bay in his protologue. There are four sheets of Dallachy's in MEL all from Rockingham Bay labelled as *G. pleiostigma* in Mueller's hand. Sheets MEL1598995 and MEL1598997 are undated while sheets MEL1598996 and MEL1598994 are dated as being collected before Mueller's publication of *Grewia pleiostigma*. MEL1598994 is here selected as lectotype because:

1. it is part of the original material;
2. agrees with the description and,
3. it is better conserved than the other sheets.

I was unable to locate the material cited by Kostermans (1972) at K. There are two sheets of *G. pleiostigma* collected by Dallachy from Rockingham Bay at BO. As to whether or not

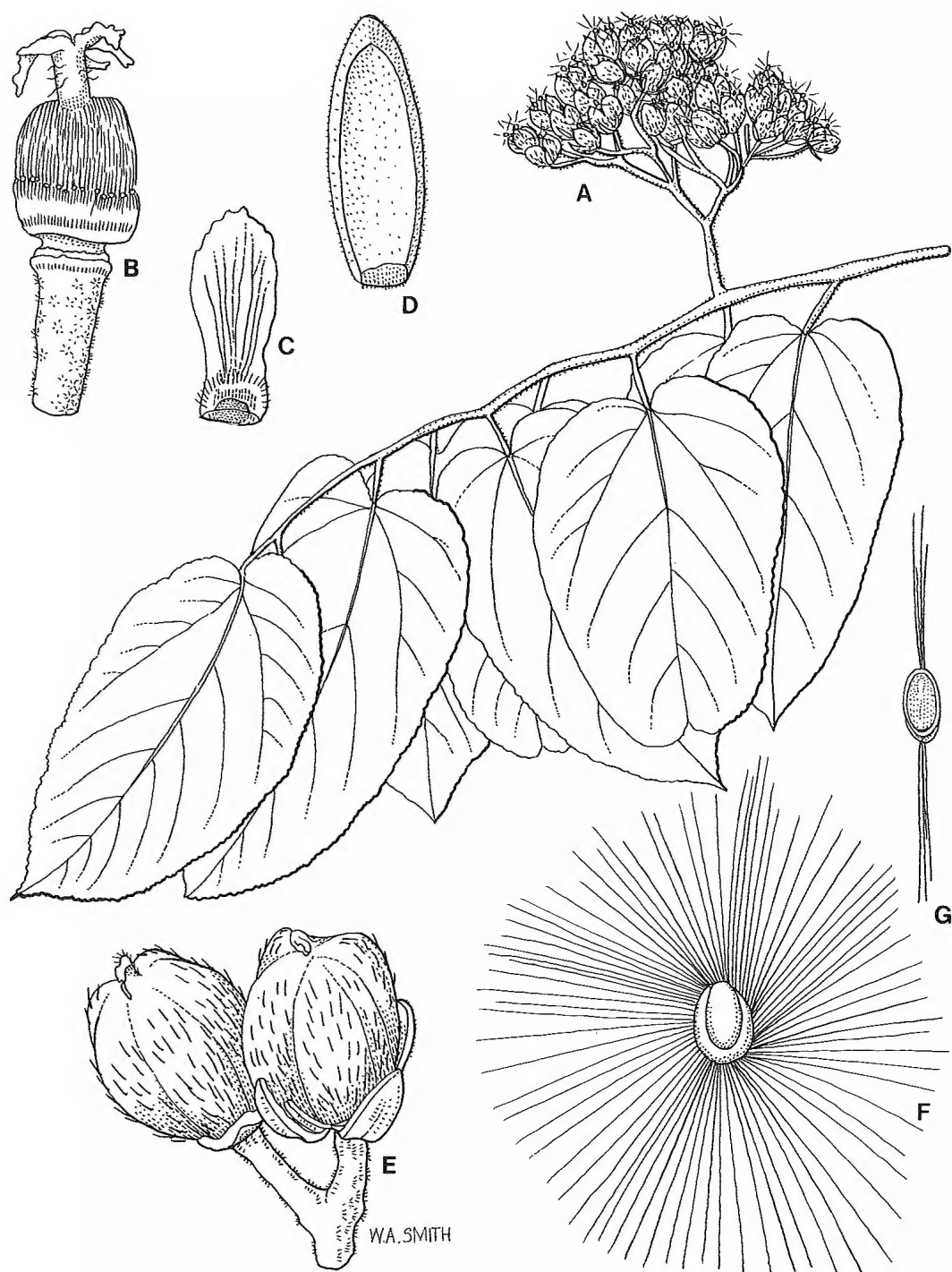


Fig. 3. *Trichospermum pleiostigma*: A. fruiting branchlet $\times 0.5$. B. androgynophore and pistil $\times 6$. C. petal, adaxial view $\times 6$. D. sepal, adaxial view $\times 6$. E. fruit $\times 3$. F. seed $\times 6$. G. longitudinal section of seed $\times 6$. A, F, G, Halford Q805; B–E, Halford Q763.

the BO specimens are isoelectotypes cannot be ascertained as there is no way of linking them to the lectotype.

Conservation status: This species is not considered threatened.

Grewia L.

While preparing an account of *Grewia* for the 'Flora of Australia' it became apparent that the specimen collected by Grahame in 1987 from Magnetic Island did not fit any of the previously known species. Recent collections of flowering and fruiting material have shown this to be an undescribed species with affinities to *G. retusifolia* and *G. scabrella*. This species is described here.

Grewia graniticola Halford, *sp. nov.* affinis *G. retusifoliae* Kurz et *G. scabrellae* Benth. Differt a *G. retusifolia* indumento fructus cano stellato-pubescenti; et a *G. scabrella* indumento folii abaxiale dense cano stellato-tomentuloso. **Typus:** Queensland. NORTH KENNEDY DISTRICT. Magnetic Island, searchlight track on ridge between Arthur Bay and Florence Bay, 19°07'S, 146°52'E, 2 April 1992, *D. Halford* Q918c (holo: BRI; iso: CANB, DNA, K, L, MEL).

Spreading shrub 2 m high. Young branchlets stellate-tomentulose; older branchlets more or less glabrous. Leaves obovate to elliptic-obovate, 4–8 cm long, 3–4 cm wide, sparsely stellate-puberulous above, densely greyish white stellate-tomentulose below, 3-nerved from the base; base rounded; apex obtuse; margin irregularly serrate; petioles 5–7 mm long, densely stellate-tomentulose. Stipules linear, 2–3 mm long, stellate-tomentulose. Buds broadly ellipsoid, 4–5 mm long. Inflorescences axillary umbellate cymes; peduncles 4–6 mm long, 1–3 flowered, 1–3 from one axil; pedicels 2–5 mm long; bracts linear, 2–3 mm long, all parts stellate-tomentulose. Sepals 4 rarely 5, greenish yellow, elliptic-ovate, 4–5 mm long, 1.5–2.0 mm wide, densely stellate-pubescent outside, glabrous inside; apex acute. Petals 4 rarely 5, 2–3 mm long, 1.0–1.5 mm wide; greenish-yellow, oblong-elliptic, sparsely covered with minute simple glandular hairs on both surfaces, sometimes emarginate at apex; basal

nectariferous gland 1.5–2.0 mm diameter, not wider than the base of the lamina, villous on margin. Androgynophore terete, 0.5–1.0 mm long, glabrous, with a hairy node at apex, not elongated above the node. Male flowers; Stamens 8–12; filaments pale yellow, c. 2 mm long; ovary and style rudimentary. Female flowers; staminodes pale yellow, 2–4; ovary globose, 1.5 mm diameter, strigose, 2-locular, 4 ovules per loculus; style stout, c. 1 mm long, sparsely stellate hairy; stigma with 3 or 4 broad lobes; lobes densely papillate. Fruit of 2 bilobed parts, 5–6 mm long, 8–10 mm wide, conspicuously 4-lobed or 2- or 3-lobed by abortion, greyish white stellate-pubescent. **Fig. 4.**

Specimens examined: Queensland. NORTH KENNEDY DISTRICT: Magnetic Island, Arthur Bay Lookout, Feb 1987, *Grahame* AQ432418 (BRI); Magnetic Island, searchlight track on ridge between Arthur Bay and Florence Bay, Apr 1992, *Halford* Q918a (BRI, QRS); ditto, *Halford* Q918b (BRI, DNA, MEL); Mingela Bluff, Jan 1992, *Forster* PIF9441 & *Bean* (BRI); 16 km SSW of Myola Homestead, Aug 1992, *Thompson & Sharpe* HUG36 (BRI); Cape Gloucester/Hideaway Bay, 25 km SE of Bowen, Sep 1992, *Batianoff & Carter* 92019177 (BRI, K, LAE, MEL).

Distribution and habitat: *G. graniticola* is presently known from four localities in North-east Queensland from Magnetic Island south to Cape Gloucester. (**Map 1**). It grows on coarse sandy soils derived from granite in mixed low open forests or woodlands and dry vine thickets.

Phenology: Flowering material has been collected in February and April. Fruiting material has been collected in April and September.

Relationships: *G. graniticola* has affinities with *G. retusifolia* and *G. scabrella*. It differs from *G. retusifolia* in having a greyish white stellate-pubescent indumentum on the fruit surface, and from *G. scabrella* in having a densely greyish white stellate-tomentulose indumentum on the lower surface of the leaf. The habit and habitat of *G. graniticola* differs from those of the other two.

Conservation status: Though *G. graniticola* is presently only known from four localities, it is quite common in two of these sites. The population on Magnetic Island is within the National Park, on the hills on the north east end of the island. A conservation coding of 2RC based on Thomas and McDonald (1989) is appropriate.

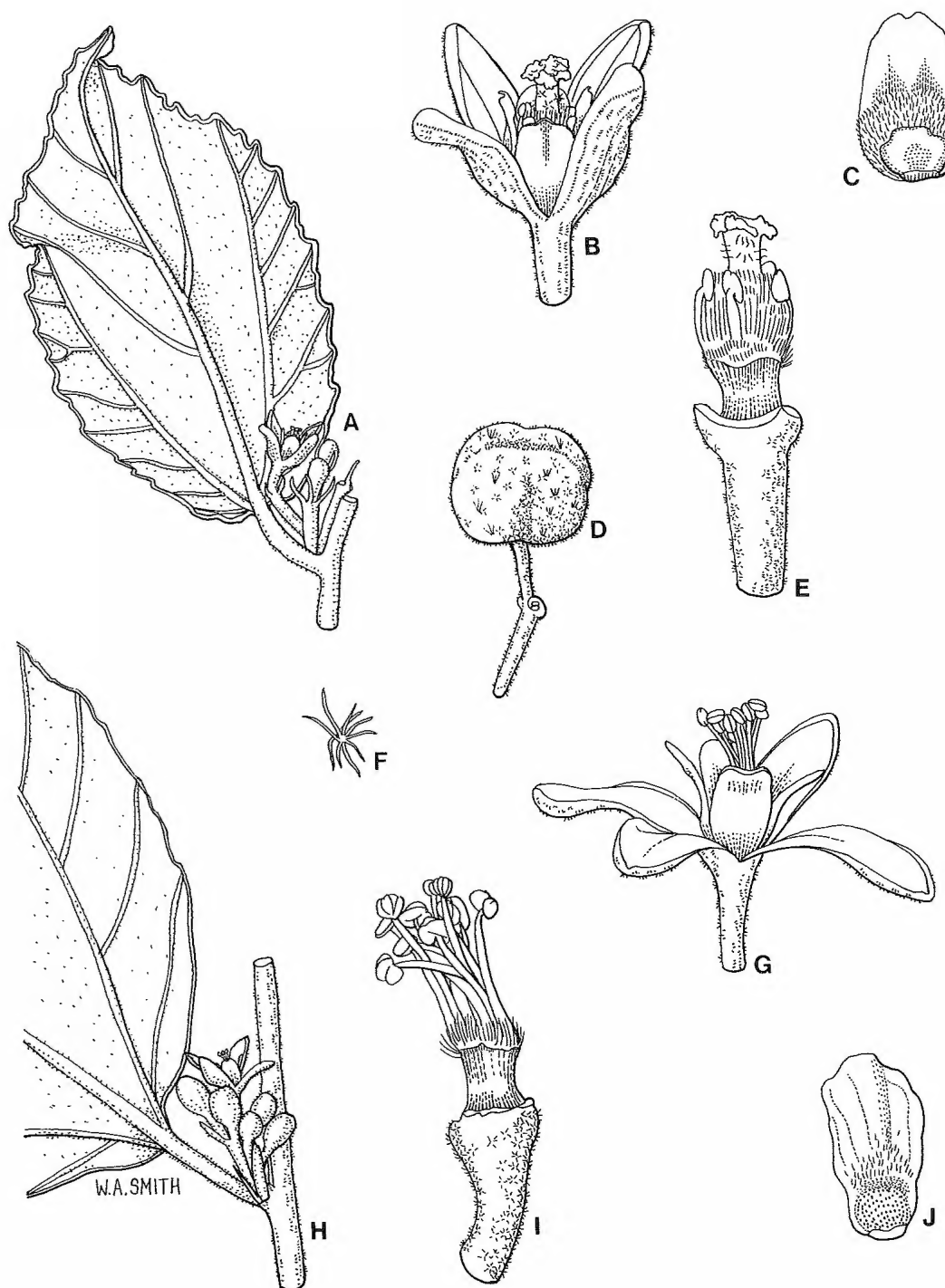
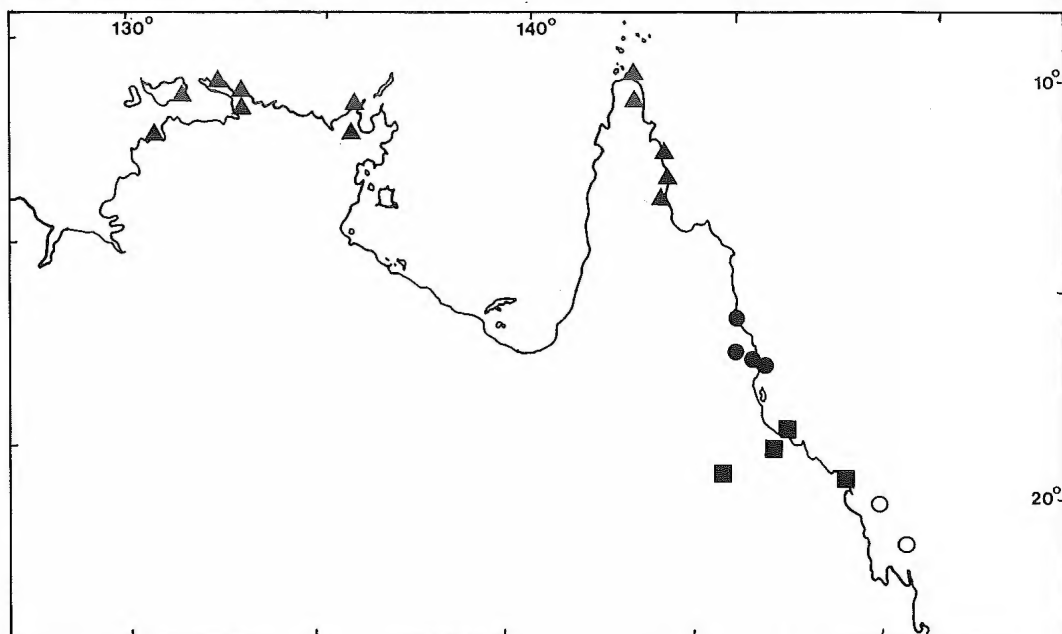


Fig. 4. *Grewia granitica*: A. branchlet with female inflorescence $\times 2$. B. female flower $\times 6$. C. petal from female flower, adaxial view $\times 9$. D. fruit $\times 2$. E. androgynophore, staminodes and pistil $\times 9$. F. stellate hair from lower leaf surface $\times 50$. G. male flower $\times 6$. H. branchlet with male inflorescence $\times 2$. I. androgynophore and stamens $\times 9$. J. petal from male flower, adaxial view $\times 9$. A–F, Halford Q918A, G–J, Halford Q918B.



Map. 1. ○ *Berrya rotundifolia*, ▲ *Berrya javanica*, ● *Trichospermum pleiostigma*, ■ *Grewia graniticola*.

Etymology: The specific epithet refers to the occurrence of this species on soils derived from granite.

Acknowledgments

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